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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/511,640

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Weixiao Liu

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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT

PAPER NUMBER

2611

MAIL DATE

DELIVERY MODE

06/02/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/511,640	Applicant(s) LIU ET AL.	
	Examiner Kevin M. Burd	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-8 and 10-15 is/are rejected.
- 7) ☒ Claim(s) 2 and 9 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 October 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This office action, in response to the appeal brief filed 3/3/2008, is a non-final office action.

Response to Appeal Brief

2. In view of the appeal brief filed on 3/3/2008, PROSECUTION IS HEREBY REOPENED. A new set of grounds of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) initiate a new appeal by filing a notice of appeal under 37 CFR 41.31 followed by an appeal brief under 37 CFR 41.37. The previously paid notice of appeal fee and appeal brief fee can be applied to the new appeal. If, however, the appeal fees set forth in 37 CFR 41.20 have been increased since they were previously paid, then appellant must pay the difference between the increased fees and the amount previously paid.

A Supervisory Patent Examiner (SPE) has approved of reopening prosecution by signing below:

Response to Arguments

3. The previous drawing objection is withdrawn.
4. Applicant's arguments with respect to claims 1, 3-8 and 10-15 have been considered but are moot in view of the new grounds of rejection.
5. The previous rejection of claims 2 and 9 are withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 3-6, 8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shanley, II (US 4,617,587).

Regarding claims 1 and 8, Shanley discloses a method of synchronizing the received clock and a local clock in a receiver. Shanley discloses a phase locked loop that attempts to synchronize the subcarrier frequency and the oscillator frequency. The phase locked loop receives the subcarrier frequency and will sweep the oscillator frequency in discrete steps until the oscillator frequency is locked to (equal to) the received subcarrier frequency. This is recited in column 12, lines 49-68. The oscillator's sweep will start at a starting frequency value. This starting frequency value will have a "central frequency offset value" of zero. The sweep of the frequency range will begin and a discrete step of a frequency value will be added to the central frequency offset

value creating a new offset value. The new frequency point will be the starting frequency point plus the offset value that was equal to the discrete step. A determination will be made whether lock has occurred at this new frequency value. As the sweep continues, another discrete step will take place. This will add another discrete step frequency value to the previous frequency offset value creating a new frequency offset value. A determination will be made whether the lock has occurred at this new frequency value. As the sweep continues, another discrete step will take place. This will add another discrete step frequency value to the previous frequency offset value creating another new frequency offset value. A determination will be made whether a lock has occurred. This process of sweeping through the frequency range and determining if a lock has occurred will continue until a lock has been achieved or the end of the frequency range is reached (column 13, lines 1-7). If a lock is not achieved when the end of the frequency range in the direction of the frequency sweep is reached, the recovery apparatus will continue to sweep the oscillator frequency in the opposite direction (column 13, lines 1-7). Therefore, the above process will be repeated but in the opposite direction of the previous sweep. A starting point will be used containing a central frequency offset of zero, a discrete frequency step will take place (adding the discrete frequency step value to the central frequency offset value), a determination of lock is made, another discrete step is made and so on and so on until lock is achieved or the end of the frequency range in this direction is reached. The discrete step value is known in the recovery apparatus and will result in a number of frequency offsets from the starting frequency point of the sweeps. The first sweep will

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comprise offset values of: 0 Hz, +discrete step frequency value Hz, +2*discrete step frequency value Hz, +3*discrete frequency value Hz, +4*discrete value frequency value Hz and so on until the end of the range in the positive direction. The results of the second sweep in the second direction will comprise offset values of 0 Hz, -discrete step frequency value Hz, -2*discrete step frequency value Hz, -3*discrete frequency value Hz, -4*discrete value frequency value Hz and so on until the end of the range in the negative direction (opposite of the positive direction). These offset points will be substantially symmetrical about the central offset value (no offset value). A determination is made after each step in the sweep is made and will sweep away from the starting frequency. Though, Shanley discloses the use of known discrete steps (and known discrete step sizes) in the sweep and the frequency range of the system, Shanley does not disclose calculating a preselected number of offset values. Since, Shanley discloses the size of the discrete steps in the frequency range and the length of the frequency range, determining the total number of discrete steps is easily calculated by dividing the discrete step size by the total frequency range to determine the number of discrete steps necessary to cover the entire frequency range. This number of steps is necessary to ensure the entire range is covered and a proper frequency lock is achieved. It would have been obvious for one of ordinary skill in the art to carry out this simple mathematical equation to allow the method and apparatus to know how many steps are necessary to ensure the entire frequency range is swept through. This would allow the processor to know the length of time it would take to step through the range in each direction of the sweeps, allowing the processor to know when a correction is to

take place such as notifying components to enter or awaken from a power saving mode.

Regarding claims 3-5 and 10-12, Shanley discloses the sweeps will be conducted in discrete steps and continue until the lock is attained. The number of steps can be any number that allows this to occur. Though, Shanley does not disclose the values of the computed number of discrete steps, the specific size of the steps or the specific size of the recovery range, these ranges are a design choice of the system. It would have been obvious for one of ordinary skill in the art at the time of the invention to determine these values to allow locking to occur. The selection of the specific size of the step will be selected to allow a lock to occur quickly and efficiently while allowing the entire recovery range to be swept. The specific value of the recovery range is selected to accommodate for severe errors being present. The number of steps will be determined from the step size and recovery range.

Regarding claims 6, 13 and 14, the method will be conducted in any amount of steps needed to ensure proper phase lock. The sweeps will be carried out in multiple directions as stated above.

7. Claims 7 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shanley, II (US 4,617,587) in view of Guillemain et al (US 6,175,600).

Regarding claims 7 and 15, Shanley discloses a method and processor for establishing timing synchronism between the oscillator frequency and the subcarrier frequency as stated above. Shanley does not disclose the specific type of recovery algorithms used. Guillemain discloses using the Mueller and Muller algorithm and the

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Gardner algorithm for timing recovery (column 5, lines 9-13). These algorithms are well known in the art and it would have been obvious for one of ordinary skill in the art at the time of the invention to utilize these well known algorithms to recover the proper timing of the carrier received in the method and processor of Shanley. Achieving fast and correct timing by using these algorithms is important since demodulation and further processing of the received signal cannot occur until phase lock is established.

Allowable Subject Matter

8. Claims 2 and 9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
5/26/2008